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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/623,095	07/17/2003	Steve McCormack	M065/ 2615CIP	2885

7590 10/03/2005  
Joseph A. Sawyer, Jr.  
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EXAMINER
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NGUYEN, CUONG QUANG

ART UNIT	PAPER NUMBER
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2811

DATE MAILED: 10/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/623,095

Applicant(s)

MCCORMACK ET AL.

Examiner

Cuong Q. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,5,7-21 is/are pending in the application.
- 4a) Of the above claim(s) 8-14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,5,7 and 15-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## **DETAILED ACTION**

### **Claim Rejections - 35 USC § 102**

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 1, 5, 7, 15, 16, and 19 are rejected under 35 U.S.C. 102(a) as being anticipated by Tsuchiko et al. (US 2003/0038316).

Tsuchiko et al. discloses a LDMOS device comprising: a gate region including a gate (108) and a gate oxide (107); a body region (114) under the gate region; and an enhanced drift region (105) under the gate region, whereby the enhanced drift region overlaps the lateral tail of the body region; a drain region (112) within the enhanced drift region such that the enhanced drift region is under the entire drain region; and a layer (104) under the enhanced drift region and the body region, wherein the layer (104) having the same conductivity type (N-type) as the enhanced drift region. See Fig.4.

Claims 1, 5, 7, 15, 16, and 19, are rejected under 35 U.S.C. 102(a) as being anticipated by Mori (WO 03/021685).

Mori discloses a LDMOS device comprising: a gate region including a gate (30) and a gate oxide (29); a body region (26) under the gate region; and an enhanced drift

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region (27) under the gate region, whereby the enhanced drift region overlaps the lateral tail of the body region; a drain region (28D) within the enhanced drift region such that the enhanced drift region is under the entire drain region; and a layer (104) under the enhanced drift region and the body region, wherein the layer (104) having the same conductivity type (N-type) as the enhanced drift region. See Fig.1.

### **Claim Rejections - 35 USC § 103**

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 5, 7, and 15-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hsing et al. (US 5,517,046) in view of Mori (WO 03/021685).

Regarding claims 1, 5, 7, 15, 16, 19, Hsing et al. discloses a LDMOS device comprising: a gate region including a gate (26) and a gate oxide (24); a body region (29) under the gate region; and an enhanced drift region (31) under the gate region; a drain region (34) within the enhanced drift region such that the enhanced drift region is under the entire drain region; and an epitaxial layer (22) under the enhanced drift region and

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the body region, wherein the layer (22) having the same conductivity type (N-type) as the enhanced drift region. See Fig.3.

Hsing et al. does not teach that the enhanced drift region overlaps the lateral tail of the body region.

As above discussing, Mori teaches that the enhanced drift region overlaps the lateral tail of the body region.

Regarding claims 18 and 21, as shown in Hsing Fig.3, a buried layer (23) provided under the epitaxial layer (22) and above a substrate (20), the buried layer (23) having the conductivity type of the epitaxial layer (N-type) and a different conductivity type than the substrate (P-type).

It would have been obvious to one of ordinary skill in the art to form the enhanced drift region such as the enhanced drift region overlaps the lateral tail of the body region as taught by Mori into Hsing et al.'s device in order to obtain an offset drain type MOS transistor having a stable threshold voltage and a low ON resistance. See Mori's abstract.

Regarding claims 17 and 20, Hsing et al. further teaches that the conductivity type can be reverse such as the conductivity type of the enhanced drift region and the epitaxial layer can be P-type instead of N-type. See Hsing et al.'s col.2 lines 50-67.

The term "purposely" in claims 1, 5 and 7 does not add any "structure limitation" into claims and is considered as an "intended use limitation". Ex parte Masham, 2

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USPQ2d 1647. Claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. In re Danley, 120 USPQ 528, 531 (CCPA 1959). "Apparatus claims cover what a device is, not what a device does." (emphasis in original) Hewlett - Packard Co. v. Bausch & Lomb Inc., 15 USPQ2d 1525, 1528 (Fed. Cir. 1990). In apparatus, article, and composition claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art.

### ***Response to Arguments***

3. Applicant's arguments filed 7-19-05, with respect to the rejection(s) of claim(s) 1, 5 and 7 under Kitamura et al. have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of above new founded references.

### **Conclusion**

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

5. Papers related to this application may be submitted to Technology center (TC) 2800 by facsimile transmission. Papers should be faxed to TC 2800 via the TC 2800 Fax center located in Crystal Plaza 4, room 4-C23. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Group 2811 Fax Center number is (703) 872-9306. The Group 2811 Fax Center is to be used only for papers related to Group 2811 applications.

6. Any inquiry concerning this communication or any earlier communication from the Examiner should be directed to CUONG Q NGUYEN whose telephone number is (571) 272-1661. The Examiner is in the Office generally between the hours of 6:30 AM to 5:00 PM (Eastern Standard Time) Monday through Thursday.

7. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor Eddie Lee who can be reached on (571) 272-1732.

8. Any inquiry of a general nature or relating to the status of this application should be directed to the Technology Center Receptionists whose telephone number is 308-0956.

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Cuong Nguyen

A handwritten signature in black ink, appearing to read 'Cuong Nguyen', written over the printed name.

Primary examiner

9/28/05